Abstracts

Coplanar Waveguide, A Surface Strip Transmission Line Suitable for Nonreciprocal Gyromagnetic Device Applications (1969 [MWSYM])

C.P. Wen. "Coplanar Waveguide, A Surface Strip Transmission Line Suitable for Nonreciprocal Gyromagnetic Device Applications (1969 [MWSYM])." 1969 G-MTT International Microwave Symposium Digest of Technical Papers 69.1 (1969 [MWSYM]): 110-115.

A novel integrated circuit transmission line with all conducting elements on the same side of a dielectric substrate (coplanar waveguide) has been demonstrated as a suitable structure for fabricating nonreciprocal microwave magnetic devices. As shown in Figure 1, the coplanar waveguide (CPW), consists of a strip of thin metallic film deposited on the surface of a dielectric slab with two ground electrodes running adjacent and parallel to the strip on the same surface. The r-f electric field between the center conductor and the ground electrodes tangential to the air-dielectric boundary produces a discontinuity in displacement-current density at the interface, thus giving rise to an axial as well as transverse component of r-f magnetic field shown in Figure 2. These r-f magnetic field components provide the elliptical polarization needed for nonreciprocal gyromagnetic devices. The coplanar configuration of the conducting elements permits easy connection of external shunt elements such as active devices in hybrid integrated circuits. It is also ideal for shunt connection of various elements in monolithic microwave integrated circuit systems.

❑ Return to main document.